

CLAIMS

1. A humeral nail for the proximal humerus comprising a shaft having a longitudinal axis and having a proximal portion with at least three axially spaced transverse bores, each bore having an axis, which axes are circumferentially angularly offset from each other about the longitudinal shaft axis, at least two of the proximal transverse bores extend at a proximal-distal angle to the longitudinal axis of said shaft.
2. The humeral nail as set forth in claim 1 wherein the axis of the proximal most transverse bore extends at a proximal-distal angle to the longitudinal axis.
3. The humeral nail as set forth in claim 2 wherein the axis of the distal most transverse bore in said proximal portion runs at a proximal-distal angle to the longitudinal axis oriented with respect to the angle of said proximal most hole axis such that the axis of the proximal and distal transverse bores converge.
4. The humeral nail as set forth in claim 3 wherein the axis of the distal most transverse bore is at an angle of approximately 75° to the longitudinal axis and the angle of the proximal most hole is approximately 80°.
5. The humeral nail as set forth in claim 4 wherein the circumferential angular offset between the distal most transverse bore with respect to the proximal most transverse bore is approximately 25°.
6. The humeral nail as set forth in claim 1 wherein four transverse bores are provided in the proximal portion of the nail shaft.

7. The humeral nail as set forth in claim 6 wherein the transverse bore adjacent the proximal most transverse bore is oriented with its axis approximately perpendicular to the longitudinal axis.

8. The humeral nail as set forth in claim 6 wherein the transverse bore adjacent the most distal transverse bore in the proximal portion is oriented with its axis approximately perpendicular to the longitudinal axis.

9. The humeral nail as set forth in claim 6 wherein the angular offset between the transverse bore adjacent the proximal most transverse bore and the proximal most bore is approximately 25°.

10. The humeral nail as set forth in claim 9 wherein the angular offset between the transverse bore adjacent the distal most bore and the distal most bore in the proximal portion is approximately 90°.

11. The humeral nail as set forth in claim 10 wherein the angular offset of the two bores adjacent the proximal most transverse bore and the distal most transverse bore is 90°.

12. The humeral nail as set forth in claim 6 wherein the nail shaft is solid.

13. The humeral nail as set forth in claim 6 wherein the shaft has a distal portion with two transverse bores, the distal most transverse bore is formed as an elongated hole elongated in a direction parallel to the shaft longitudinal axis in the distal region.

14. A pair of humeral nails as set forth in claim 1 wherein a first nail shaft is provided for the right humerus and a second nail shaft is provided for the left humerus, said first and second nail formed with the transverse bores being oriented differently for the left and the right humerus in the proximal portion, except for the proximal most transverse bore, the arrangement of the transverse bores of the first nail shaft being a mirror image with respect to the transverse bores of the second nail shaft.

15. The humeral nail as set forth in claim 1 wherein the transverse bores are provided with a thread, which corresponds to the thread of a locking screw.

16. A nail for insertion into a long bone having first and second ends with a longitudinal axis extending between said first and second ends comprising:

at least three cross-bores located adjacent said first end, each of said cross-bores having a bore axis oriented at a different circumferential angle with respect to said longitudinal axis and at least two of said cross-bores having a bore axis oriented at non-perpendicular angles with respect to said longitudinal nail axis.

17. The nail as set forth in claim 16 wherein the axis of one of said at least three cross-bores is oriented perpendicular to said longitudinal axis.

18. The nail as set forth in claim 17 wherein there are four cross-bores.

19. The nail as set forth in claim 18 wherein the nail axis of two cross-bores are oriented perpendicular to the longitudinal axis.

20. The nail as set forth in claim 16 further including a pair of cross-bores located adjacent said second end of said nail.

21. The nail as set forth in claim 20 wherein the axis of the two bores adjacent said second end lie in the same plane as a plane containing the axis of a cross-bore closest to the first end of the nail.

22. The nail as set forth in claim 16 wherein the axis of said at least two cross-bores oriented at a non-perpendicular angle to said longitudinal axis are oriented at diverging angles.